

## Community Co-Design: From Magic Squares to Magic Dresses

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This project joined elementary, secondary, and postsecondary students with a textile museum, community cultural centre, and provincial science centre to collaborate on textile design and printing, as well as garment design, creation, and exhibition. While the design process centered on the concept of the magic square, each contribution was independent and progressive, and handed off to the next group like a baton in a relay race.

The project began with a museum exhibition focusing on historic and contemporary textiles from Muslim Africa. Magic squares are well-known mathematical models, much like a Sudoku number puzzle, which array numbers in a square grid, ordered so that each row, column, and diagonal add up to the same sum. The 3 x 3 magic square began its life story in ancient China as a model of the universe expressed in numeric proportions. From its beginnings, the magic square was considered a powerful icon that signified the universe's perfect workings, one that could transmit such perfection, protection, and healing to its bearer. In Africa, the squares, along with the symbols/patterns within them, have been stitched, painted, and woven into material form, not as mathematical playthings but as talismans that become supercharged prayers for protection, healing, and meditation (Kreamer, Roberts, Harney & Purpura, 2007).

Following a visit to the textile exhibition, elementary students learned about the magic square and translated the patterns they saw into their own designs through a community cultural centre program. More than 120 students from four local schools learned the fundamentals of pattern literacy, created designs based on the magic square, carved them into lino blocks, and printed them on strips of muslin. Picking up the design thread, students from local secondary schools adopted the lino blocks and used them to design and print 3-metre lengths of muslin.

The project continued with sixty postsecondary fashion design students who had learned the history and significance of the magic square in their textiles lecture. In turn, they were also introduced to a design technique invented by Julian Roberts, a U.K. fashion designer, called "Subtraction Cutting" (Roberts, 2002). An unusual departure from traditional pattern cutting, this method uses a long length of fabric sewn into a tube. A bodice front and back are positioned

anywhere on the cloth and a variety of shapes are cut from the remaining length. The holes cut from the fabric—the negative spaces—are the spaces through which the body will move. Instead of cutting to use the cut pieces, this method involves cutting to remove (i.e., to subtract) the unwanted pieces from the length of fabric, producing minimal waste (Roberts, 2002). Fashion students were divided into teams of two and instructed to create a dress using the magic squares printed cloth and the subtraction cutting method. Seams were not required to be serged; however, hemlines, necklines, and armholes had to be finished with a hem, facing or bias binding. After only 4 hours of design development, dresses were assembled on mannequins with a number for identification, and juried by six judges representing the various community partners and a visiting professor. Garment assessment criteria included the creative use of fabrics within subtraction cutting methods and readiness for presentation, with hems, necklines, and armholes complete. One thousand dollars in prize money was allocated among the top winning teams.

A selection of printed cloths and garments were then exhibited at the provincial science centre for six months while remaining dresses were passed on to a group of 3<sup>rd</sup>-year Fashion Communication students for use in a fashion promotion course. The challenge for the final group of students in this design chain was to develop a fashion show experience around the Magic Square Dresses with minimal budget, using garments not specifically designed for functionality (as all dresses lacked zippers). A promotional concept was developed which showcased the garments in a hybrid runway-exhibit format both to amplify the artistic character of the project and provide the audience with the opportunity of fully appreciating the intricacies of the textiles. Titled “The Grid,” the runway show/exhibit attracted more than 200 attendees in an intimate setting where models performed a runway walk and then transformed themselves into living sculptures by stepping onto low white pedestals.

Diverse learning outcomes were achieved in this multistage learning activity. Students participated in an interdisciplinary approach to art education, connecting mathematics and visual arts with experiential methods of fashion design and exhibition. At each stage of the process, original works of art were produced and exhibited. Students developed improvisation skills, working with what was provided and taking it to the next level—a distinct departure from the usual design curriculum. As one student commented, “It’s just a fusion of draping techniques and unique prints. ... It’s not just about a trend or a seasonal color, it’s about history—and all different ages and groups of students coming together to make something magical.”

#### References

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